UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,173	12/12/2000	Edward D. Ball	MXI-026DVCN2	5414

959 7590 01/14/2004

LAHIVE & COCKFIELD, LLP.
28 STATE STREET
BOSTON, MA 02109

EXAMINER	
YAEN, CHRISTOPHER H	

ART UNIT	PAPER NUMBER
1642	

DATE MAILED: 01/14/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/735,173	BALL ET AL.	
	Examiner	Art Unit	
	Christopher H Yaen	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/12/2003 has been entered.

2. Claims 1-24 and 29-37 are canceled.

3. Claims 25-28 are pending and examined on the merits.

Terminal Disclaimer

4. The terminal disclaimer filed on 7/14/2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 5,833,985 has been reviewed and is accepted. The terminal disclaimer has been recorded.

NEW ARGUMENTS

Claim Rejections - 35 USC § 112, 1st paragraph

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 25-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The written description in this case has only set forth a bispecific molecule comprising an FcγRI antibody or antigen binding fragment thereof that is not inhibited by endogenous Ig and a bombesin or gastrin-releasing peptide (GRP), and is therefore not commensurate in scope to claims that read on the said FcγRI antibody or antigen binding fragment and any and all autocrine growth factors.

The claims recite "autocrine growth factors" as part of the invention. However, there does not appear to be an adequate written description in the specification as-filed of the essential structural feature that are in common between that of bombesin or GRP and all autocrine growth factors claimed. The Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement make clear that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the genus (Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001, see especially page 1106 3rd column).

Applicant does not appear to have reduced to practice a representative number of autocrine growth factors so as to be entitled to the genus of all autocrine growth factors claimed. Neither has Applicant provided a sufficient written description of any structure that may be correlated from the structures of bombesin or GRP provided to encompass all growth factors. Autocrine growth factors encompasses many different molecule with highly diverse structures and biologically diverse functions. Thus the genus of compounds encompassed by this term is extensive and the artisan would not be able to recognize that Applicant was in possession of the invention as now claimed.

Consequently, Applicant was not in possession of the instant claimed invention. See Regents of the University of California v. Eli Lilly and Co. 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). Adequate written description of genetic material "'requires a precise definition, such as by structure, formula, chemical name, or physical properties,' not a mere wish or plan for obtaining the claimed chemical invention." Id. 43 USPQ2d at 1404 (quoting Fiers, 984 F.2d at 1171, 25 USPQ2d at 1606). The disclosure must allow one skilled in the art to visualize or recognize the identity of the subject matter of the claim. Id. 43 USPQ2d at 1406. A description of what the genetic material does, rather than of what it is, does not suffice. Id.

Applicant is directed to the Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 25 is rejected under 35 U.S.C. 102(b) as being anticiapted by Ball *et al* (J. Hematother 1992 Spring; 1(1):85-94). Ball et al teach a bispecific molecule comprising an autocrine growth factor specific for a tumor cell and an antibody or antigen binding fragment thereof which binds to FcyRI on an effector cell at a site that is not inhibited by endogenous immunoglobin. Specifically- "monocytes plus BsAb plus human serum resulted in maximal killing (50-80%)" of promyelocytic leukemia cells. Absent evidence to the contrary, the addition of human serum would inherently comprise an autocrine growth factor specific for a tumor cell.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ball ED *et al* (J. Hematother 1992 Spring; 1(1):85-94) in view of Cuttita *et al* (Nature, 1985; 316(6031):823-826, previously cited).

The claims are drawn to a bispecific molecule comprising an autocrine growth factor specific for a tumor cell and an antibody or antigen binding fragment thereof that

binds to an FcγRI on an effector cell at a site tht is not inhibited by endogenous Ig (claim 25). The claims are further limited to the tumor cell being a human small-cell lung carcinoma cell (claim 26); the autocrine growth factor binding to the GRP receptor on a small cell lung carcinoma cell (claim 27); and the autocrine growth factor being selected from the group consisting of bombesin and GRP (claim 28).

Ball ED *et al* discloses the production of a bispecific molecule using an anti-FcγRI antibody that is able to bind to FcγRI outside of the Ig binding site conjugated to a another molecule that has the ultimate purpose of associating with a tumor cell. However, Ball ED *et al* do not specifically characterize that the bispecific molecule is able to bind to GRP receptors on small cell lung carcinoma cells nor does it teach the specific autocrine growth factor, namely bombesin or GRP. This deficiency is made up by Cuttita *et al*, wherein it is disclosed that bombesin and bombesin like peptides specifically bind to cellular receptors on SCLC cells.

Therefore, it would have been *prima facie* obvious to one of ordinary skill at the time the invention was made to manufacture a bispecific molecule comprising an anti-Fc□RI antibody or antigen binding fragment thereof and a bombesin or GRP autocrine growth factor in order to target SCLC cells. One of ordinary skill in the art would have been motivated to combine bombesin or GRP with an antibody to Fc□RI because Ball ED *et al* successfully taught that using the anti-Fc γ RI antibody in human growth factor mediates the killing of promyelocytic leukemia cells while Cuttita et al successfully teach that one of ordinary skill in the art can successfully target SCLC cells via the receptors for bombesin and or GRP. Taken together, the references suggest a reasonable

expectation of success that SCLC cells can be targeted for cell killing with the bispecific molecule of Ball et al combined with growth factors that bind to bombesin and or GRP receptors.

All other rejections are withdrawn in view of the applicant's amendments and arguments thereto as set forth in Paper No. 12.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher H Yaen whose telephone number is 703-305-3586. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached on 703-308-3995. The fax phone number for the organization where this application or proceeding is assigned is 703-308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Mary Bruhl for:

Christopher Yaen
Art Unit 1642
December 15, 2003